

REMARKS

In response to the Official Action mailed April 23, 2003, Applicants amend their application and request reconsideration. In this Amendment, claims 9-12 are added so that claims 1-12 are now pending.

The invention concerns an apparatus producing laser light from a traditional solid state medium, such as a YAG rod. The rod is excited by incident excitation light produced by a semiconductor laser. In response to the pumping of the rod by the excitation light, the rod is stimulated and, upon relaxation, produces laser light. The laser light is partially trapped within an optical resonator to produce a laser beam.

The apparatus produces pulsed laser light because the excitation light supplied by the semiconductor laser is pulsed and not continuous. The characteristics of the semiconductor laser are sensitive to the temperature of the semiconductor laser. When a pulse of current is applied to a semiconductor laser and the pulse has a uniform magnitude, the semiconductor laser characteristics change during the pulse. The change in characteristics produces, for example, a change in wavelength of the light produced during each pulsed light output. The changing wavelength of the excitation light alters the quantity of light absorbed by the rod, i.e., changes the degree of excitation of the rod. As a result, the laser beam output from the resonator and generated by the crystalline rod has undesirably varying characteristics.

In the invention, the problem of the variation of the characteristics of the excitation light during each pulse is compensated by including in the apparatus a power supply that produces the pulses of current that drive the semiconductor laser. That power supply produces pulses that have a magnitude that changes during each pulse. Examples of pulses produced by the power supply of the claimed apparatus are illustrated in Figures 2(b), 9, 10, 13, and 14 of the patent application. Added claim 9 is supported by the embodiment of Figure 14. Claim 1 has been amended to make clear that the claimed power supply of the apparatus is a power supply that produces particular kinds of pulses that drive the semiconductor laser.

Claims 1-6 were rejected as anticipated by Pocholle et al. (U.S. Patent 5,173,910, hereinafter Pocholle). This rejection is respectfully traversed.

Pocholle cannot anticipate any claim now pending because Pocholle does not describe a power supply within the scope of the invention as claimed. Applicants agree that Pocholle describes a rod that is excited by excitation light produced by a plurality of semiconductor laser diodes. The semiconductor laser diodes are supplied with current,

i.e., are driven, by a modulator 7 shown only in Figure 1 of Pocholle and referred to only once in that patent. The sole reference to that modulator that has been found appears in column 2, lines 57-58. There is simply insufficient description within Pocholle to make a determination that the modulator 7 has the structure and characteristics of the power supply of the claimed invention. Rejection either for anticipation or for obviousness based upon Pocholle of the claims now pending would be improper. Therefore, withdrawal of the rejection is respectfully requested.

Claims 1-7 were rejected as anticipated by Chang et al. (U.S. Patent 5,978,407, hereinafter Chang). This rejection is respectfully traversed.

The apparatus described by Chang includes a rod that produces laser light upon excitation with light generated by semiconductor lasers. The apparatus described includes multiple diode modules 30. It is presumed that the laser diodes 32 in these modules are semiconductor lasers although there is no such description within Chang. Further, there is no description in Chang of a power supply of any nature that supplies power to these pumping light diodes. There was no assertion in the Official Action that there was a description of such a power supply in Chang, only a reference to electrical connections. Applicants concede that a power supply must be connected to the laser diodes 32 of Chang in order for the apparatus to operate. However, without some express disclosure of the power supply, the rejection of claims 1-7 as anticipated by Chang was clearly erroneous. Moreover, with regard to the amended claims that describe the power supply more specifically, it is apparent that no pending claim can be anticipated by nor obvious in view of Chang.

Claim 8 was rejected as unpatentable of Pocholle in view of Marshall et al. (U.S. Patent 5,982,789, hereinafter Marshall). This rejection is respectfully traversed.

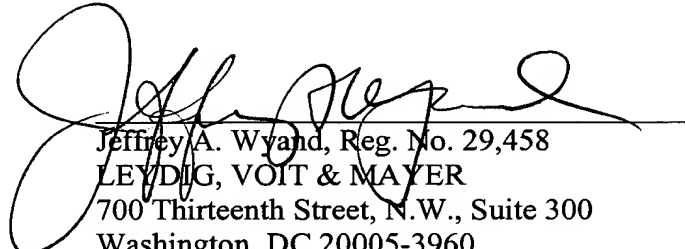
Assuming, for the sake of argument, that Marshall does disclose the structure described in the limitation added to claim 8, it is apparent that rejection is founded upon the assertion that Pocholle anticipates claim 1, from which claim 8 depends. Because it has already been demonstrated that Pocholle cannot anticipate claim 1 as now pending, the rejection of claim 8 cannot be properly be maintained.

New claims 101-12 are derived from amended claims 1-3, respectively. Claim 10 is identical to claim 1, except for the elimination in claim 10 of a limitation not essential to patenting. The limitations of claims 11 and 12 are identical to the limitations of claims 2 and 3. Claims 10-12 are patentable for the same reasons claims 1-3 are patentable.

In re Appln. of INOUE et al.
Application No. 09/883,956

Reconsideration and allowance of claims 1-12 are earnestly solicited.

Respectfully submitted,


Jeffrey A. Wyand, Reg. No. 29,458
LEYDIG, VOIT & MAYER
700 Thirteenth Street, N.W., Suite 300
Washington, DC 20005-3960
(202) 737-6770 (telephone)
(202) 737-6776 (facsimile)

Date: 
JAW:ves